

this application, then such extensions of time are hereby petitioned under 37 C.F.R. § 1.136(a), and any fees required therefor (including fees for net addition of claims) are hereby authorized to be charged to our Deposit Account No. 19-0036.

Amendments

In the Claims:

Please cancel claim 110 without prejudice or disclaimer.

Please add the following new claims 113-116:

113. (New) The compound as claimed in claim 5, wherein Z is selected from the group consisting of spermiyl, spermidyl, amino acid, peptidyl, diaminoalkyl, and polyamine when Z is part of any of the groups $-(CH_2)_bNHC(O)Z$, $-(CH_2)_cNHC(O)Z$, $-CH_2CH(OR_7)CH_2NHC(O)Z$, or $-CH_2CH(OR_8)CH_2NHC(O)Z$.

114. (New) The compound as claimed in claim 93, wherein Z is selected from the group consisting of spermiyl, spermidyl, amino acid, peptidyl, diaminoalkyl, and polyamine when Z is part of any of the groups $-(CH_2)_bNHC(O)Z$, $-(CH_2)_cNHC(O)Z$, $-CH_2CH(OR_7)CH_2NHC(O)Z$, or $-CH_2CH(OR_8)CH_2NHC(O)Z$.

115. (New) The compound or the polycation as claimed in claim 95, wherein Z is selected from the group consisting of spermiyl, spermidyl, amino acid, peptidyl,

diaminoalkyl, and polyamine when Z is part of any of the groups $-(CH_2)_bNHC(O)Z$, $-(CH_2)_cNHC(O)Z$, $-CH_2CH(OR_7)CH_2NHC(O)Z$, or $-CH_2CH(OR_8)CH_2NHC(O)Z$.

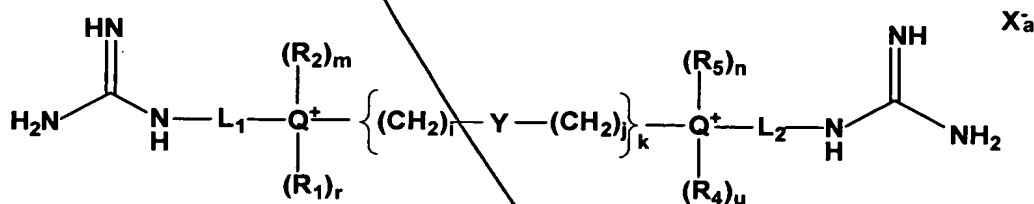
116. (New) The compound or the polycation as claimed in claim 97, wherein Z is selected from the group consisting of spermyl, spermidyl, amino acid, peptidyl, diaminoalkyl, and polyamine when Z is part of any of the groups $-(CH_2)_bNHC(O)Z$, $-(CH_2)_cNHC(O)Z$, $-CH_2CH(OR_7)CH_2NHC(O)Z$, or $-CH_2CH(OR_8)CH_2NHC(O)Z$.

Please substitute the following claim 22 for the pending claim 22:

22. (Once amended) The compound as claimed in claim 21, wherein R_7 and R_8 are

Please substitute the following claim 48 for the pending claim 48:

48. (Twice amended) A compound having the formula:



wherein

Q is N;

R_1 and R_4 , independently of one another, are selected from the group consisting of H, $-(CH_2)_p-D-Z$, an alkyl, an alkenyl, an alkynyl, an aryl, and alkyl ether optionally

substituted by one or more of an alcohol, an aminoalcohol, an amine, an amide, an ether, a polyether, a polyamide, an ester, a mercaptan, an alkylthio, a urea, a thiourea, a guanidyl, or a carbamoyl group, and wherein at least one of R₁ and R₄ is a straight chain or branched, cyclic, alkenyl, alkynyl or aryl group having from about 6 to about 64 carbon atoms;

D is O, S, or a bond;

p is an integer from 0 to about 100;

Z is selected from the group consisting of amine, spermyl, carboxyspermyl, guanidyl, spermidinyl, putricinyl, diaminoalkyl, pyridyl, piperidinyl, pyrrolidinyl, polyamine, amino acid, peptide, and protein;

m, n, r, and u are 0 or 1;

R₂ and R₅, independently of one another, are selected from the group consisting of H and a C₁ - C₈ alkyl, alkenyl, aryl, and alkyl optionally substituted by one or more of an alcohol, an amine, an amide, an ether, a polyether, a polyamide, an ester, a mercaptan, a urea, a thiourea, a guanidyl, or a carbamoyl group;

i and j are integers from about 2 to about 3;

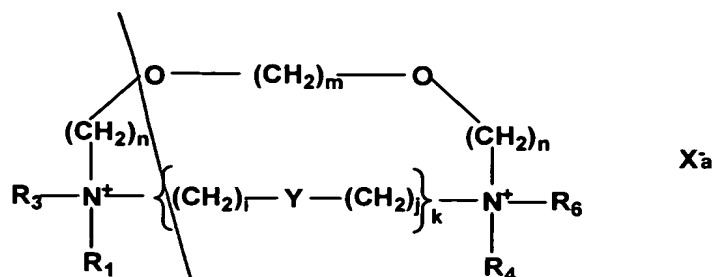
k is an integer from 1 to about 3;

L₁ and L₂, independently from one another, are an alkylene or an alkylene ether; and

Y is selected from the group consisting of CH₂, O, S and NH.

Please substitute the following claim 85 for the pending claim 85:

85. (Twice amended) A compound having the formula:



wherein

Y is selected from the group consisting of CH₂, an ether, a polyether, an amide, a polyamide, an ester, a sulfide, a urea, a thiourea, a guanidyl, a carbamoyl, a carbonate, a phosphate, a sulfate, a sulfoxide, an imine, a carbonyl, and a secondary amino group and wherein Y is optionally substituted by $-\text{X}_1\text{---L}'\text{---X}_2\text{---Z}$ or $-\text{Z}$;

R₁, R₃, R₄ and R₆, independently of one another, are selected from the group consisting of H, $-(\text{CH}_2)_p\text{---D---Z}$, an alkyl, an alkenyl, an alkynyl, an aryl, and an alkyl ether, wherein any one of R₁, R₃, R₄, and R₆ are optionally substituted by one or more of an alcohol, an aminoalcohol, an amine, an amide, an ether, a polyether, a polyamide, an ester, a mercaptan, an alkylthio, a urea, a thiourea, a guanidyl, or a carbamoyl group, and at least one of R₁, R₃, R₄ and R₆ is a straight chain or branched, cyclic, alkyl, alkenyl, alkynyl or aryl group having from 6 to about 64 carbon atoms; and R₁, R₃, R₄ and R₆ may optionally be covalently linked with each other or with Y, to form a cyclic moiety;

Z is selected from the group consisting of amine, spermiyl, carboxyspermiyl, guanidyl, spermidinyl, putricinyl, diaminoalkyl, pyridyl, piperidinyl, pyrrolidinyl, polyamine, amino acid, peptide, and protein;

X₁ and X₂, independently of one another, are selected from the group consisting of NH, O, S, alkylene, and arylene;

Handwritten:
CH
SUB
D

Sub 1
CH
comp
L' is selected from the group consisting of alkylene, alkenylene, alkynylene, arylene, alkylene ether, and polyether;

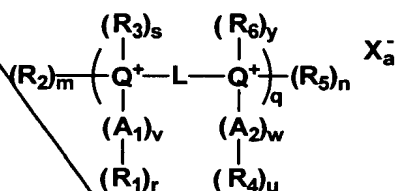
D is O, S, or a bond;

m and n are 0 or 1; and

i, j, k, l and p are integers from 1 to about 10.

Please substitute the following claim 93 for the pending claim 93:

93. (Twice amended) A compound having the formula:



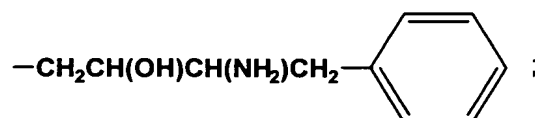
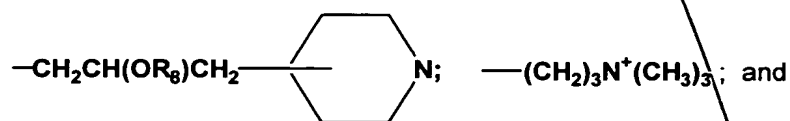
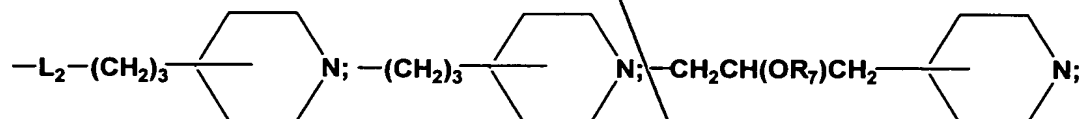
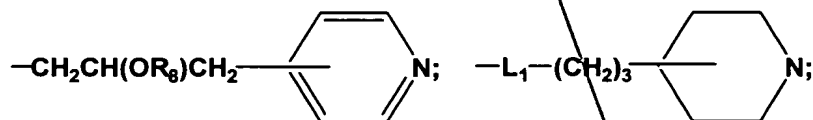
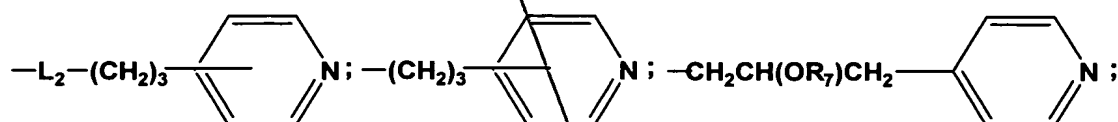
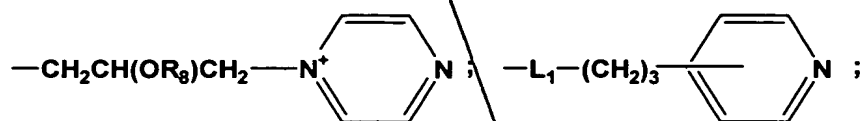
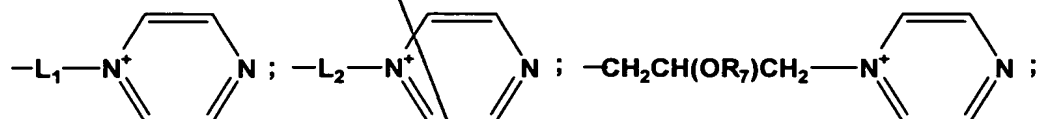
wherein

Q is N;

L is a bivalent organic radical capable of covalently linking each Q;

Sub 1
R₁ - R₆, independently of one another, are selected from the group consisting of H, -(CH₂)_p-D-Z, an alkyl, an alkenyl, an alkynyl, an aryl, and alkyl ether, wherein any one of R₁-R₆ are optionally substituted by one or more of an alcohol, an aminoalcohol, an amine, an amide, an ether, a polyether, a polyamide, an ester, a mercaptan, an alkylthio, a urea, a thiourea, a guanidyl, or a carbamoyl group, and wherein at least one of R₁, R₃, R₄ and R₆ is a straight chain or branched, cyclic, alkyl, alkenyl, alkynyl or aryl group having from about 6 to about 64 carbon atoms and at least one of R₂, R₃, R₅ and R₆ is selected from the group consisting of -CH₂CH(OR₇)CH₂NH₂; -CH₂CH(OR₈)CH₂NH₂; -(CH₂)_bNHC(O)Z;

$-(\text{CH}_2)_6\text{NHC(O)Z}$; $-\text{CH}_2\text{CH(OR}_7\text{)CH}_2\text{NHC(O)Z}$; $-\text{CH}_2\text{CH(OR}_8\text{)CH}_2\text{NHC(O)Z}$;
 $-\text{CH}_2\text{CH(OR}_7\text{)CH}_2\text{NHC(NH)NH}_2$; $-\text{CH}_2\text{CH(OR}_8\text{)CH}_2\text{NHC(NH)NH}_2$; $-\text{L}_1-\text{N(CH}_2\text{CH}_2\text{OH)}_2$;
 $-\text{L}_2-\text{N(CH}_2\text{CH}_2\text{OH)}_2$; $-(\text{CH}_2)_4\text{N}[-(\text{CH}_2)_8-\text{CH}=\text{CH}-(\text{CH}_2)_7-\text{CH}_3]-\text{CH}_2-\text{CH(OR}_7\text{)CH}_2\text{NH}_2$;
 $-(\text{CH}_2)_4\text{N}[-(\text{CH}_2)_8-\text{CH}=\text{CH}-(\text{CH}_2)_7-\text{CH}_3]-\text{CH}_2-\text{CH(OR}_8\text{)CH}_2\text{NH}_2$;



and R_1 and R_4 or R_3 and R_6 may optionally be covalently linked with each other,
 or with L to form a cyclic moiety;

Z is selected from the group consisting of amine, spermyl, carboxyspermyl, guanidyl, spermidinyl, putrescyl, diaminoalkyl, pyridyl, piperidinyl, pyrrolidinyl, polyamine, amino acid, peptide, and protein;

D is O, S, or a bond;

A₁ and A₂, independently of one another, are selected from the group consisting of CH₂O, CH₂S, CH₂NH, C(O), C(NH), C(S) and (CH₂)_i;

X is a physiologically acceptable anion;

L₁ and L₂, independently from one another, are an alkylene or an alkylene ether;

R₇ and R₈, independently from one another, are H or a carbohydrate;

b and c are integers independently selected from 1 to about 4;

m, n, r, s, u, v, w and y are 0 or 1, with the proviso that when both m and n are 0 at least one of r, s, u and y is other than 0;

p and t are integers from 0 to about 100;

q is an integer from 1 to about 1000; and

a is the number of positive charge divided by the valence of the anion.

[Please substitute the following claim 94 for the pending claim 94:]

94. (Three times amended) The compound as claimed in any one of claims 1, 5, 48, 85, 89, and 93, wherein said cyclic group is a cholesteryl group.

Please substitute the following claim 101 for the pending claim 101:

101. (Three times amended) A composition comprising one or more compounds of any one of claims 1, 5, 37, 38, 48, 61, 85, 93, 95, and 97.

[Please substitute the following claim 102 for the pending claim 102:]

102. (Three times amended) A composition comprising one or more compounds of any one of claims 1, 5, 37, 38, 48, 61, 85, 93, 95, and 97 and at least one additional component selected from the group consisting of a cell, cells, a cell culture, a cell culture media, a neutral lipid, a nucleic acid, and a transfection enhancer.

Please substitute the following claim 104 for the pending claim 104:

104. (Three times amended) A lipid aggregate comprising one or more compounds of any one of claims 1, 5, 37, 38, 48, 61, 85, 93, 95, and 97.

Please substitute the following claim 107 for the pending claim 107:

107. (Three times amended) A kit comprising one or more compounds of any one of claims 1, 5, 37, 38, 48, 61, 85, 93, 95, and 97 and at least one additional component selected from the group consisting of a cell, cells, a cell culture media, a nucleic acid, a transfection enhancer and instructions for transfecting a cell or cells.

[Please substitute the following claim 108 for the pending claim 108:]

108. (Three times amended) A method for introducing a polyanion into a cell or cells, said method comprising forming a liposome from a positively charged compound of any one of claims 1, 5, 37, 38, 48, 61, 85, 93, 95, and 97, contacting the liposome with a polyanion to form a positively-charged polyanion-liposome complex and incubating the complex with a cell or cells.



[Please substitute the following claim 109 for the pending claim 109:]

109. (Three times amended) A method for introducing a biologically active substance into a cell, said method comprising forming a liposome of a compound of any one of claims 1, 5, 37, 38, 48, 61, 85, 93, 95, and 97 and a biologically active substance and incubating the liposome with a cell or cell culture.
